"We'll Always Have Paris": Out-of-Country Buyers in the Housing Market

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Abstract

Previous research has shown that non-local household investors make sub-optimal asset selection and market timing decisions. However, in real estate markets, heterogeneity in returns can exist even with identical ex ante investment (timing) choices, given that transaction prices are the outcome of a complex search-and-bargaining process. Analyzing notarial data for the Paris housing market, we find that "out-of-country" buyers indeed buy at higher prices and resell at substantially lower prices than local investors, ceteris paribus. Furthermore, our evidence suggests that this pattern is not due to higher search costs and information asymmetries, but instead stems from wealth-related differences in bargaining intensity. Finally, we estimate the causal effect of out-of-country demand shocks on property prices in Paris to be positive but small.

Key words: foreign home buyers; secondary residences; bargaining; information asymmetries.

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1 Introduction

Households often realize better investment returns on their "local" holdings than on non-local ones. Relatedly, assets held by local investors often outperform assets held by non-locals. These phenomena can typically be attributed to the informational disadvantages of non-local investors (e.g., Ivković and Weisbenner, 2005; Van Nieuwerburgh and Veldkamp, 2009), which lead to sub-optimal decision-making when it comes to asset selection and the timing of investments. Also in the housing market, non-local buyers may mistime the market, and buy precisely when better-informed local investors seek to sell (Kurlat and Stroebel, 2015; Chinco and Mayer, 2016). However, an arguably underappreciated fact about the housing market is that, as prices are the outcome of a complex search-and-bargaining process, different types of investors may realize systematically different returns even with identical ex ante investment (timing) decisions. Moreover, such heterogeneity in prices and returns can arise not just from differences in search costs and information asymmetries, but also from variation in bargaining power and efforts across buyers and sellers (Harding et al., 2003). If individual real estate investors buying from abroad exhibit relatively low bargaining intensity—for example because they are wealthy and have a high opportunity cost of time—then this would adversely affect their financial performance.

In this paper, we study whether "out-of-country" house buyers indeed buy at higher prices and resell at lower prices, ceteris paribus, leading to poorer investment outcomes than for local buyers. We then analyze whether the observed gap in returns is due to differences in absolute search and information costs, or instead to heterogeneity in the relative ability and willingness to forego financial returns.

Next to comparing the prices paid (and received) by non-local investors to those paid by locals, we also want to study how out-of-country buyers *affect* the prices paid by other real estate market participants. The impact of cross-border property purchases on housing affordability has recently been a topic of debate in big cities around the world (e.g., The Economist, 2018). A recent and quickly-growing literature examines the effect of international property investors on housing prices (e.g., Sá,

2017; Badarinza and Ramadorai, 2018), but these papers either focus on institutional investors, or proxy for foreign demand in an indirect and aggregate manner. By contrast, we use unique micro-level transaction data containing information on the ultimate household owners.

The richness of our data set allows us to disentangle the drivers and characteristics of real estate investment decisions by different buyer groups, and in particular enables us to provide a more complete empirical characterization of out-of-country residential real estate investments than prior work. Such stylized evidence can be helpful when analyzing non-local housing demand's welfare effects (e.g., Favilukis and Van Nieuwerburgh, 2018) and when developing policy initiatives.

The housing market that we study is that of Paris. We obtain information on all residential real estate transactions involving a foreign household buyer or seller between 1992 and 2016 from a comprehensive database of notarial deeds. We also obtain data for a ten percent random sample of all transactions for which both the buyer and seller are French. In total, our database covers close to 100,000 transactions over the 25-year sample period. For each transaction, we have data on the location and characteristics of the property, the transaction date and price (and in most cases the same information for the previous transaction), and a set of socio-demographic characteristics for each buyer and seller (including nationality and residence status at the time of transacting). We define out-of-country buyers in Paris as buyers that are not French and are also not a resident of France. Purchases by out-of-country households account for 2.8% of all purchases in Paris over our time period, and for more than one third of all purchases done by foreigners.

We start our analysis by documenting a series of new stylized facts about out-of-country real estate investors. These non-resident foreign buyers tend to be older and have a higher socio-economic status relative to French buyers, and even more so relative to resident foreigners (i.e., non-French buyers that live in France). They buy smaller properties than French buyers, but opt for more upscale property types and more expensive Paris neighborhoods with more secondary residences historically. Their purchase volume is positively correlated with favorable macroeconomic conditions in the home country.

These findings illustrate the luxury consumption dimension of out-of-country buyers' investments. At the same time, they also highlight the importance of considering selection and sorting effects when analyzing heterogeneity in investment outcomes.

Next, we use our resale data to show that out-of-country property investors realize dramatically lower—by more than 10%—total capital gains, keeping property location and the timing of purchase and sale fixed, than other residential real estate market participants. This result is robust to controlling for a number of socio-demographic characteristics (e.g., gender, marital status) of market participants.

We then turn to exploring the likely drivers of the observed heterogeneity in prices and capital gains. Non-local household investors are of course likely to suffer from informational disadvantages, which have been shown to affect their performance in conventional asset classes (e.g., Ivković and Weisbenner, 2005)—and to lead to mistiming of investments in the residential real estate market (Kurlat and Stroebel, 2015; Chinco and Mayer, 2016).[1] At first sight, it thus seems plausible that high information asymmetries can lead non-resident foreigners to purchase at relatively high prices and to resell at price levels that are relatively low. However, different additional results provide evidence to the contrary. First, *resident* foreigners realize *higher* capital gains than French home buyers, even though they must also have some exposure to the same informational disadvantages as non-resident foreigners. Second, the lower capital gains realized by non-residents are not concentrated in higher purchase prices, even though one might expect information asymmetries to be most relevant when *buying* in a foreign city (rather than when *reselling* one's property after a number of years). Third, the effects have not significantly decreased over our 25-year sample period, despite globalization and advances in information technology. Fourth, when studying cross-sectional heterogeneity in the effects, we find that some of the largest price premia at purchase are paid by buyers from countries for which information

[1] Other papers document the importance of information asymmetries for non-local *institutional* investors in the *commercial* real estate market. Garmaise and Moskowitz (2004) show how investors prefer nearby properties. Agarwal et al. (2018) study prices paid by foreign buyers and find that on average they exceed those paid by local investors by 3.6%—but the effect decreases over time as foreign institutions learn from experience.

asymmetries are likely relatively low (e.g., Switzerland). By contrast, buyers from some countries with arguably very significant search and information costs (e.g., China) actually pay *lower* prices than French buyers. Fifth, unlike resident foreigners, out-of-country investors do not realize better investment outcomes in areas of Paris with relatively high proportions of compatriots historically.

An alternative explanation for the observed empirical patterns is differences in bargaining behavior between local and non-local investors. Harding et al. (2003) show how differences in socio-demographic traits between residential real estate investors can translate into variation in price outcomes.[2] In particular, they argue that wealthy individuals have a lower marginal utility of wealth and relatively high opportunity costs of time, leading them to bargain less intensely. The stylized patterns in the data discussed before clearly illustrate the luxury consumption dimension of out-of-country purchases. It is thus not unlikely that out-of-country buyers indeed put less efforts into bargaining. Crucially, bargaining intensity is a source of return variation that may be persistent in the face of globalization and advances in information technology. Two additional tests give strong support to the hypothesis that wealth-related heterogeneity in bargaining intensity explains the lower capital gains for out-of-country buyers. First, we show that categories of non-resident foreigners—classified by combination of nationality, gender, and marital status—predicted to be wealthier realize lower capital gains. Second, nationality-level long-run trends in the average capital gain (purchase premium) correlate negatively (positively) with home-country economic growth and increases in income inequality.

Taken together, our evidence strongly suggests that the lower average capital gains realized by out-of-country buyers are related to their higher wealth and lower bargaining intensity—and that worldwide variation in potential buyers' ability and willingness to forego financial returns affects the pricing of Paris properties. An implication from our results is that distance between assets and investors may not just proxy for information asymmetries but also correlate with investor characteristics that affect

[2]Recent work confirms the result in Harding et al. (2003) that women have less bargaining power in the housing market, by documenting gender differences in negotiated price outcomes (Andersen et al., 2018) and in returns to housing (Goldsmith-Pinkham and Shue, 2020).

bargaining behavior. More generally, our findings illustrate the importance of acknowledging matching and bargaining dynamics in distant real estate transactions (e.g., Badarinza et al., 2019).

In the final part of our paper, we examine the impact of non-resident foreign demand on real estate prices. We find a small but statistically significant positive conditional correlation between the net inflow of out-of-country buyers in a property's neighborhood and the realized capital gain. However, this result cannot be interpreted as causal, since locational choices are not random. In order to address the endogeneity of foreign demand, we use "shift-share" instruments that allocate aggregate purchase volumes to areas based on historical settlement patterns and neighborhoods' ex ante desirability. This instrumental variable strategy gives an almost identical—positive but small—estimate of the effect of out-of-country purchases on property prices, albeit with higher estimated standard errors.

Our lack of evidence for an economically meaningful effect on prices can be interpreted in the spirit of Saiz and Wachter (2011), in that sorting of out-of-country buyers in more desirable areas will not necessarily translate into higher prices in those areas as long as mobile local homeowners act as "price arbitrageurs" and relocate to other neighborhoods. However, this would also imply that our results may underestimate the causal effect of non-resident foreign demand on *average* house prices in Paris.

2 Housing Transaction Data

We study the housing market in the French capital Paris, which has about 2.3 million inhabitants. Our main data source is the Base d'Informations Economiques Notariales (BIEN) database managed by Notaires de Paris–Ile-de-France, the notary association of the Paris region. The database of notarial deeds covers about 85% of transactions taking place in Paris.[3] We obtain information on all transactions of houses and apartments in Paris over the period 1992–2016 in which either the buyer or the seller (or both) was non-French. We only consider trades between households, and exclude those involving other

[3]Each property transaction in France needs to take place through a notary, but it is not mandatory for notaries to feed transaction information into the database. The coverage ratio can be estimated by comparing the number of observations in the database to aggregate data on the number of signed deeds or to fiscal data (INSEE, 2014).

types of investors,[4] leaving us with 54,227 observations. Moreover, we obtain data on a random sample of ten percent of all transactions in which both the buyer and the seller were French households—a sample of 42,908 transactions. In total, our database thus contains information on 97,135 transactions over a 25-year period. Our data set contains detailed information at the levels of the property (address and quality characteristics), the transaction (most crucially the sale date and price, but in many cases also the previous (purchase) date and price), and the buyer and seller (most crucially nationality and residence status, but also some other demographic and socio-economic characteristics).

Panel A of Table 1 shows the composition of our database in terms of buyer and seller nationality status (French or foreign), and the average transaction price for each combination of buyer and seller nationality type. We see that average transaction prices range from 268,702 EUR (French buyer and French seller) to 308,687 EUR (French buyer and foreign seller). These unconditional averages are not controlling for the residence status of buyers and sellers, or the timing of transactions.

[Insert Table 1 about here]

Many of the purchases by foreigners in Paris are of course related to immigration and local employment opportunities. To document the relevance of the *cross-border* demand originating from foreigners, we rely on the residence status of the buyers. Panel B of Table 1 shows the residence location of both foreign and French buyers and sellers in our sample. We see that 51.1% of foreign buyers in our sample are already living in Paris, 8.4% are located in the wider Paris region (Ile-de-France), and a tiny fraction (2.9%) is located in the rest of France. This makes 62.4% of foreign buyers in our sample "resident foreigners", who live in France at the time of their purchase. We label the remaining 37.6% of foreign buyers, who reside outside of France, as "non-resident foreigners" or "out-of-country" buyers.[5]

[4]While in the UK a majority of cross-border investments likely occur through corporations (Sá, 2017; Badarinza and Ramadorai, 2018), in our data less than 3% of foreign housing purchases are done by an institutional investor. This mitigates concerns that we are missing an important part of foreign demand by focusing on transactions by individuals.

[5]The residence status of buyers and sellers in our database is determined by where they have their primary residence on the day of signing the deed with the notary. This implies that, for example, a buyer who currently resides outside

The same table also shows that 96.7% of French buyers can be classified as residents.[6]

Panel C computes the relative importance of non-resident foreign buyers and sellers compared to both resident foreigners and French nationals.[7] Out-of-country buyers account for approximately 2.8% of all purchases over our sample period. Their average purchase price—almost 360,000 EUR—is about one third higher than the average price paid by French buyers, and more than 40% above the average purchase price of resident foreigners.

Panel D of Table 1 shows the twenty nationalities that are the most important foreign buyer groups in our data set. We see the largest numbers of purchases by households from Italy, Great Britain, the United States, Portugal, and China. Israeli buyers have the highest ratio of non-resident purchases (78.4%), followed by Swiss (69.5%) and American (59.8%) buyers. These numbers are much lower for Portuguese (3.5%) and Chinese (6.1%) buyers.

3 New Stylized Evidence on Out-of-Country Investments

In this section, we use our database to document a number of stylized facts regarding the characteristics of out-of-country buyers, the quality and location of the properties that they purchase, and the drivers of their investment decisions. Relative to the prior literature, this novel micro-level evidence will increase the understanding of how non-local demand materializes differently than local demand in a global hotspot. Our results also point to selection and sorting effects that are important to consider when analyzing heterogeneity in investment outcomes—and help validate the credibility of hypotheses related to the sources of such heterogeneity.

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of France but has the intention to move would still be classified as non-resident. Yet, we can reasonably expect a small minority of foreigners purchasing from abroad to use the property as a primary residence.

[6] Wherever relevant, frequencies and descriptive statistics are re-weighted estimates that take into account that our database only includes a ten percent random sample of transactions between Frenchmen.

[7] We thus group together non-resident and resident French buyers and sellers. Non-resident Frenchmen will on average have tighter links to Paris than non-resident foreigners, and also be more likely to use their property as a (quasi-)primary residence. Purchases by this group can thus hardly be considered as a realization of "out-of-country" demand.

3.1 Investor characteristics

Table 2 compares out-of-country home buyers to the other categories on a number of different dimensions. The average age at the time of purchase is substantially higher for non-resident foreigners (49.9 years) than for French buyers (43.0 years) or resident foreign buyers (42.7 years). Out-of-country buyers are also substantially more likely to be married. Finally, the table documents that 50.8% of non-resident foreign buyers can be classified as being part of a high socio-professional category (senior managers, liberal professions, scientists),[8] while only 36.4% of resident foreigners and 45.1% of French buyers belong to this group. These different findings suggest that non-resident foreigners may on average have more purchasing power than the other buyer groups.

[Insert Table 2 about here]

3.2 Property characteristics

We now study how the properties purchased by non-resident foreigners differ from those bought by other market participants. We saw in Panel C of Table 1 that out-of-country buyers pay substantially higher prices on average than French buyers. In the next section, we will analyze whether an actual "price premium" exists, i.e., whether out-of-country buyers pay higher prices *for the same property* relative to other buyer groups. However, before doing that, it is relevant to study whether some of the unconditional price differential can also be explained by these buyers buying *different properties*.

To examine whether out-of-country buyers purchase more expensive types of properties, we exploit the fact that our database has information on the previous transaction price (even if it took place before 1992) for more than half of all observations. This allows us to study whether out-of-country buyers buy properties that are associated with higher prices *even when they are bought by Frenchmen*; such an analysis is not confounded by any causal effect of buyer nationality on transaction prices. If

[8] The database uses the socio-professional categorization of the French statistical office INSEE. It includes nine main groups; we here refer to group 3 ("cadres et professions intellectuelles supérieures").

we indicate the year of the current (resale) transaction by t and the year of the previous (purchase) transaction by s, we can estimate different specifications of the following model for all resales by French nationals over our sample period for which we have information on the previous price:

$$\ln P_{i,s} = \alpha + \beta_1 B_{i,t}^{NRF} + \beta_2 B_{i,t}^{RF} + X_{i,s}^{'}\gamma + \varepsilon_{i,s}, \tag{1}$$

where $P_{i,s}$ indicates the price of property i in previous transaction year s (i.e., the price at which the property was *bought* by a French household in year s), $B_{i,t}^{NRF}$ and $B_{i,t}^{RF}$ are dummy variables that equal one if the buyer in year t is a non-resident foreigner or resident foreigner, and $X_{i,s}$ is a vector of controls. The coefficients β_1 and β_2 will pick up average market value differences in the properties that are *later* bought by foreigners. We show the OLS estimation results of equation (1), with fixed effects for the initial purchase years, in the first column of Table 3.

[Insert Table 3 about here]

We see that out-of-country buyers purchase properties that are on average 10% more valuable. We then repeat the estimation of equation (1), but now including a detailed geographical control variable. More specifically, we use fixed effects for all neighborhood units ("Ilots Regroupés pour l'Information Statistique" or IRIS) created by the French statistical office INSEE. Each such neighborhood is a block of buildings containing about 2,000 inhabitants; our database covers transactions in 918 different neighborhoods. The results are shown in the second column of Table 3. Out-of-country households actually buy slightly less expensive properties than French buyers once controlling for location. Taken together, our results in the first two columns suggest that out-of-country households choose more expensive neighborhoods, but not more expensive properties *within* each neighborhood.

Columns 3–4 then repeat the models from columns 1–2 but now with price per square meter as the dependent variable. Interestingly, we find that non-resident foreigners are associated with a significantly

higher price-per-area ratio, even when controlling for neighborhood fixed effects. A comparison of these results to those in the first two columns suggest that out-of-country investors buy substantially smaller properties. In columns 5–6, we thus consider all transactions in our data set and regress variables measuring the property surface and number of rooms against the same buyer group dummy variables as in equation (1). On average, controlling for neighborhood, the properties bought by non-resident foreigners are smaller by 3.7 square meters and 0.2 rooms than those purchased by French buyers.

In summary, our results show that out-of-country buyers purchase small but upscale properties (e.g., better-than-average condition or finishing) in expensive neighborhoods, thus illustrating the luxury consumption dimension of out-of-country buyers' investments.

3.3 Locational sorting

The results in Table 3 suggest a sorting of out-of-country individuals into more expensive neighborhoods. In Table 4, we show the relative importance of non-resident and resident foreigners for deciles of neighborhoods ranked along a number of dimensions measuring their ex ante desirability. First, we rank neighborhoods on their average price per square meter over the first five years of our sample period (1992–1996) using the transactions in our data set. (The distributions shown in these columns are computed using post-1996 data only.) Next, we rank neighborhoods by their year-1990 education level, and more specifically the percentage of adults with a higher education degree according to census data of the French statistical office INSEE. As we can expect higher-educated households to earn more and therefore to be able to outbid lower-educated households in the housing market, this variable can be considered an alternative proxy for the attractiveness of a neighborhood. In the final columns, we show statistics for neighborhood deciles of the year-1990 ratio of secondary residences (owned by both Frenchmen and foreigners), again using census data from INSEE. Even more than prices or education levels, which are mainly determined by the locational choices of residents, this variable may pick up how attractive a neighborhood is as the location for a vacation home or "pied-à-terre".

[Insert Table 4 about here]

We find that the fraction of non-resident foreign buyers tends to increase with the desirability of the neighborhood, irrespective of the ranking criterion used. For example, while non-resident foreigners only account for 2.8% of all purchases in our database (cf. Panel C of Table 1), this number rises to 8.4% in the top decile of neighborhoods ranked by their ex ante proportion of secondary residences.

The map of Paris in Figure 1 graphically illustrates this sorting at a higher geographical level. It shows the twenty administrative districts or "arrondissements" of Paris. Below each district number, we show the relative importance of non-resident foreign buyers. The shading for each district indicates the mean transaction price computed using our data. The percentages of out-of-country purchases are very high for the relatively attractive (and expensive) 1^{st}, 4^{th}, 6^{th}, 7^{th}, and the 8^{th} districts, with the Louvre, the Marais, the Jardin du Luxembourg, the Eiffel Tower, and the Arc de Triomphe respectively. The proportions are generally much lower for less expensive and less central districts.

[Insert Figure 1 about here]

3.4 Historical trends and drivers of investment decisions

Finally, we look at the evolution of out-of-country purchase volumes over our sample period. Figure 2 plots for each year the proportion of transactions with non-resident foreign buyers. (It also shows the frequency of purchases by resident foreigners as a comparison.) The aggregate out-of-country purchase volume has been quite steady over the last 20 years or so. The same figure also shows the yearly number of purchases by non-residents from the three biggest foreign nationality groups, namely Italy, Great Britain, and the United States. Here we clearly see more volatility in yearly growth rates.

[Insert Figure 2 about here]

Can changes in home-country economic conditions explain some of the country-level variation in non-resident purchase volumes in Paris? Inspired by the literature modeling demand for luxury durable

assets (e.g., Aït-Sahalia et al., 2004; Goetzmann et al., 2011; Lovo and Spaenjers, 2018), we look into the explanatory power of measures that should be correlated with potential buyers' purchasing power. More specifically, we study how purchase volume by foreigners in Paris is driven by home-country economic growth, asset returns, exchange rate changes,[9] and income inequality.[10]

Our benchmark panel OLS regression explaining the growth in the number of purchases by different nationalities both for non-resident foreigners and for resident foreigners looks as follows:

$$\Delta \ln Purchases_{c,t} = \alpha + \Delta M_{c,t}^{'} \delta + \varepsilon_{c,t}, \tag{2}$$

where $\Delta \ln Purchases_{c,t}$ is the log change in the number of purchases by nationals of country c between year $t-1$ and t, and $\Delta M_{c,t}$ measures the changes in home-country macroeconomic conditions. All specifications include the following independent variables: the real GDP growth rate, the real equity market return, and the change in the real exchange rate relative to France (so that positive values indicate that the foreign currency gains value relative to the French franc or euro). GDP data come from the World Bank, while exchange rate and equity return data are taken from Bloomberg.[11] We also estimate models that include changes in the share of income that goes to the top 1% earners. These data come from the World Inequality Database, and are available for most country-year combinations.

We focus on the top-twenty buyer nationalities identified in Table 1. All macroeconomic variables are winsorized at the bottom and top percentile to mitigate the impact of outliers. We also limit the analysis to cases where we observe more than five purchases in year $t-1$. The results are reported

[9] Ruf and Levi (2011) show that prices of "international properties" (e.g., ski resorts) in North America are affected by exchange rate movements. Anecdotal evidence suggests that exchange rates may matter for the Paris housing market as well. For example, in 2008 an American property consultant in Paris was quoted in a New York Times article saying that "the dwindling dollar means people saving up their pennies to buy property in Paris have less to spend".

[10] Gyourko, Mayer, and Sinai (2013) provide evidence that in highly desirable U.S. cities with low rates of new housing construction—so-called "superstar cities"—a growing group of high-income households has been crowding out households with a lower willingness-to-pay for scarce housing over time.

[11] For Algeria, we collect equity data from the website of the Bourse d'Alger (http://www.sgbv.dz). We lag the equity and exchange rate change variables, which are measured at year ends, by one year.

in columns 1–2 and 4–5 of Table 5 for non-resident foreigners and resident foreigners, respectively. Columns 3 and 6 add year fixed effects to the models.

[Insert Table 5 about here]

We see that the volume of purchases by non-resident foreigners is positively correlated with economic growth in the home countries. Out-of-country purchase volume also goes up when foreign currencies appreciate—and buying in Paris thus becomes more affordable for non-resident foreign households. We find some evidence that, at least in the time series, home-country increases in income inequality correlate with the number of purchases of Paris property by non-resident foreigners. None of the macroeconomic variables is significantly correlated with the volume of purchases by resident foreigners.

3.5 Discussion

The findings in this section suggest that non-resident foreign demand for real estate in Paris has to a substantial extent been driven by older foreigners with high socio-economic status looking to buy a relatively small but high-quality property in an attractive neighborhood. These out-of-country buyers' demand correlates positively with (top) income growth in their home country. While property in certain global hotspots such as London has traditionally been viewed as a "safe-haven investment" (Badarinza and Ramadorai, 2018), Paris real estate appears to be considered a luxury consumption good by many of its out-of-country buyers.[12]

[12]We have some information on the past use for about 20% of our out-of-country sellers. These sellers are about 60% more likely to have considered the property as a secondary residence than as an investment property.

4 Investment Outcomes for Out-of-Country Buyers

4.1 Variation in purchase prices and capital gains

In this section, we study whether out-of-country buyers pay different prices for identical properties—and realize different capital gains upon resale—than other buyer groups in the Paris housing market. We use data on all properties for which we observe both a purchase price (which may relate to a transaction prior to our sample period) and a resale price. In Panel A of Table 6, we compare the mean holding period and the mean total log capital gain of non-resident foreigners to those of resident foreigners and of French nationals. We see that, while average holding periods on observed resales are comparable, out-of-country investors realize substantially lower total capital gains: 57.9% compared to 67.6% for French sellers and 75.4% for resident foreign sellers.

[Insert Table 6 about here]

We then run a regression of the following form:

$$\ln R_{i,s,t} = \alpha + \beta_1 S_{i,t}^{NRF} + \beta_2 S_{i,t}^{RF} + \beta_3 B_{i,t}^{NRF} + \beta_4 B_{i,t}^{RF} + X_{i,s,t}^{'}\gamma + \varepsilon_{i,s,t}, \tag{3}$$

where $\ln R_{i,s,t}$ is the log capital gain (i.e., $\ln P_{i,t} - \ln P_{i,s}$) on property i between year s and year t. We winsorize the total capital gains at the bottom and top percentile, and we limit our sample to holding periods of at most 40 years. $S_{i,t}^{(N)RF}$ and $B_{i,t}^{(N)RF}$ are dummy variables that equal one if the seller or the buyer at the time of the resale t is a (non-)resident foreigner, respectively. If out-of-country households indeed realize lower capital gains at resale, and pay more at purchase, we should expect β_1 to be negative and β_3 to be positive. The results of the OLS estimation of equation (3) are presented in Panel B of Table 6.

In the most basic specification of our model, shown in column 1, the control variables include a series of yearly dummy variables that equal one for each year after s and until t so that they indicate

the holding period, just like in a standard repeat-sales set-up. Furthermore, we interact these holding period dummies with a variable measuring the (year-1990) percentage of adults with a higher education degree in the property's neighborhood, to allow for the possibility that price appreciation trends vary in function of the demography of the neighborhood. We also control for neighborhood fixed effects. In column 2, we add variables related to the socio-demographic characteristics of both seller and buyer, namely age, a dummy variable for gender, a dummy variable for the marital status, and dummy variables for the socio-professional group (where we use the same categorization that we relied on before, which has nine groups), which may all affect market participants' relative bargaining power.

We find that non-resident foreigners indeed realize significantly lower capital gains. In our more exhaustive model in column 2, out-of-country sellers are estimated to realize a total capital gain that is lower by 12.9% on average, so the effect is economically large.[13] Part of the lower capital gains can be explained by the fact that non-resident foreigners pay a premium at the time of purchase of 2.6% on average. Yet, taken together, these results suggest that non-resident foreigners sell at an even higher discount of about 10%.[14]

In the next subsections, we conduct further analysis to disentangle between two possible mechanisms that could be driving our results, namely information asymmetries and search costs, and variation in bargaining intensity.

4.2 Possible mechanism 1: Information asymmetries and search costs

The importance of information asymmetries in housing markets has long been recognized (e.g., Garmaise and Moskowitz, 2004; Kurlat and Stroebel, 2015). Some existing studies specifically look into

[13]The returns realized by investors of course also depend on the degree of leverage. Unfortunately, the database's reporting of mortgages is spotty for all types of buyers. However, conditional on the presence of information on a mortgage in the database, the median ratio of mortgage amount to transaction price is only slightly higher for French buyers (75%) than for out-of-country buyers (70%).

[14]One possible explanation for the lower resale prices could be that non-resident foreigners put less time and money into maintaining their property. If so, we should observe a much smaller gap in resale prices between French sellers and out-of-country sellers for shorter holding periods. However, in additional analysis (unreported), we find very similar results when only considering holding periods of less than 10 years.

the behavior of non-local buyers in real estate markets. For example, Chinco and Mayer (2016) study out-of-town buyers in American cities in the mid-2000s, and find that they mistime the market and therefore realize lower capital gains than local buyers. Importantly, we keep purchase and sale period constant; ours is thus not a result about timing of entry and exit. We also control for neighborhood fixed effects, implying that our results are not driven by differences in the ability to select secularly appreciating vs. depreciating neighborhoods either. Given the search-and-bargaining nature of the housing market, information asymmetries can of course affect purchase and sale prices even when controlling for investment timing and asset selection. For example, out-of-country households interested in buying in Paris may not recognize asking prices that exceed market values, or face high search and information costs that make it optimal to limit the time spent on looking for a better deal. It is thus ex ante a plausible hypothesis that information asymmetries lead to higher purchase prices and lower resale prices for out-of-country home buyers.

However, two different results from Table 6 provide suggestive evidence that information asymmetries are not the main driving force behind the return heterogeneity that we observe. First, we can clearly see that *resident* foreigners realize higher capital gains than local home buyers, even though they must also suffer from higher search and information costs than Frenchmen. Second, one would expect information asymmetries to be most relevant for transaction prices when *buying* in a foreign city rather than when reselling years later. While the effect of searching for a counterparty has symmetric effects when buying and when selling, the knowledge of local market conditions is arguably likely to be higher at purchase than at resale. Yet, we can see in Table 6 that the lower capital gains realized by non-resident foreigners are not only—or even mainly—due to higher purchase prices.

We also conduct three additional tests related to the time-series and cross-sectional variation in prices and capital gains associated with out-of-country buyers. First, by exploiting the length of our sample period, we analyze whether the size of the effect that we document in Table 6 has changed over time. If information asymmetries are driving our results, we would expect the size of the effects to

have gone down substantially with globalization and advances in information technology in the 1990s and 2000s. In Table 7, we repeat our regression models, but with separate dummy variables for out-of-country sellers and buyers for the periods 1992–2000, 2001–2008, and 2009–2016. We see that non-resident sellers only realized marginally better capital gains over the last than over the first subperiod. (F-tests on the differences between the coefficients are not statistically significant.) Moreover, the premium associated with out-of-country purchases does not show any trend. Our main results are thus robust over time.

[Insert Table 7 about here]

Second, we study the cross-sectional heterogeneity in investment performance. If search and information costs are indeed driving the lower capital gains for out-of-country investors, then we can expect worse investment performance for nationalities that suffer from larger informational disadvantages. We therefore repeat the estimation of equation (3), with the most extensive set of controls used before, but now including separate dummy variables for non-resident foreign buyers and sellers for each of the twenty most frequent buyer nationalities. (We group together all non-resident foreigners from other countries.) In Table 8, we rank countries by the resulting estimates $\hat{\beta}_{3_c}$ of the average "price premium" associated with out-of-country purchases originating from each country c.

[Insert Table 8 about here]

We observe the highest average price premium at purchase for buyers from Russia, Ireland, the United States, Switzerland, and Canada. The lowest quality-controlled purchase prices—even below those paid by local home buyers in Paris—are paid by out-of-country buyers from Algeria, China, Israel, Portugal, and Tunisia. This ranking does not line up with some simple proxies for the magnitude of search and information costs that are also reported in the same table. Some of the largest premia are paid by buyers from countries that are geographically close to France and/or are partially French-speaking, and have had a high internet penetration over our time period. Vice versa, buyers from

countries like China and Israel arguably face very significant informational disadvantages and search costs, and yet pay *lower* prices on average.

The cross-country correlation between the purchase price premium estimates $\hat{\beta}_{3_c}$ reported in Table 8 on the one hand and the relative capital gain estimates $\hat{\beta}_{1_c}$ (unreported) following from the same model on the other hand is -0.43. The strongly negative correlation indicates that the nationalities that pay higher prices at purchase also tend to resell at lower prices. This observation helps to rule out alternative explanations based on heterogeneity in preferences or private valuations, or on anchoring on house prices in the home market.

Third, we study whether capital gains realized by foreigners are higher when they invest in areas that have historically had relatively high ratios of compatriots. Pre-existing social networks may lower information asymmetries through direct communication or the presence of specialized agents or other "soft infrastructure" (Badarinza and Ramadorai, 2018).[15] Table 9 shows the results of regressions similar to the baseline models in Table 6, but now interacting our seller and buyer group dummies with district-level terciles (created separately for each nationality) based on the seller or buyer nationality's historical share in each district, using year-1982 census data. The coefficients on the main seller and buyer group dummies show the effect for the bottom terciles, i.e., for transactions in districts with a relatively low proportion of inhabitants of the seller's or buyer's nationality historically. While we find some evidence that resident foreigners purchase at lower prices and resell at higher prices in areas that have historically been popular with compatriots, we do not find the same result for non-residents.

[Insert Table 9 about here]

Overall, the results of these tests suggest that information asymmetries are not the main driver of (variation in) the observed lower capital gains realized by out-of-country buyers.

[15] In analyzing the effect of foreign political risk on housing prices in London, Badarinza and Ramadorai (2018) rely on a "preferred-habitat" identification strategy assuming that foreign real estate buyers exhibit "home bias abroad" and buy in areas of the destination city with an already high concentration of home-country residents. In additional analysis (unreported), we find empirical support for this hypothesis: the share of inhabitants of a certain nationality in a district in 1982 positively correlates with the relative inflow of same-nationality buyers over our sample period.

4.3 Possible mechanism 2: Heterogeneity in bargaining intensity

There exists an alternative explanation for the worse average investment performance of out-of-country real estate buyers, which relates to the fact that they appear to be relatively wealthy on average. Wealthier households can be more willing to forego financial returns in the housing market because of their relatively low marginal utility of wealth; they may "prefer not to expend the time and energy needed to bargain aggressively, and so do worse" (Harding et al., 2003). More formally, out-of-country buyers may exhibit lower bargaining intensity in the negotiation process that follows a match with a potential counterparty.[16]

Table 8 showed that some of the largest premia are paid by buyers from countries with relatively substantial populations of wealthy households, which is consistent with the hypothesis of wealth-driven heterogeneity in bargaining efforts driving our results. However, we also perform two more formal tests. First, we proxy for each foreign *seller*'s wealth using the average price associated with their peer group's property *acquisitions* as follows. In the spirit of equation (1), we regress previous transaction prices against (initial purchase year fixed effects and) buyer characteristics, but now creating separate dummy variables for each combination of residence status, buyer nationality, gender, and marital status. We run this regression on all purchases by the top-twenty foreign nationalities presented before. We then use the estimated coefficients on each of these 160 group dummies (non-resident vs. resident $\times$ 20 nationalities $\times$ female vs. male $\times$ married vs. non-married) to create predicted wealth terciles for non-resident and resident foreign sellers separately. A seller is thus more likely to be allocated to a higher tercile if the combination of nationality, gender, and marital status is associated with purchases of properties that have historically been more valuable—even when bought by Frenchmen. We then repeat the models shown in Table 6, but adding interaction terms between seller status and the predicted wealth tercile. The results are shown in Table 10.

[16] It is possible that they also target a higher rate of matching, for example by posting lower list prices. Unfortunately, data on list prices (or time on the market) are not available in our empirical setting.

[Insert Table 10 about here]

In Table 10, the coefficients on the main non-resident and resident foreign seller dummies now show the effect for the bottom tercile of predicted wealth for both groups. As before, we see lower (higher) capital gains upon resale for non-resident (resident) foreign sellers. Crucially, however, sellers in the middle and especially the top tercile realize lower capital gains. (Interestingly, our results suggest that the wealthiest *resident* foreigners also realize lower capital gains than Frenchmen on average.) These results support the hypothesis that variation in wealth drives variation in foreign property buyers' investment returns.

Second, the data allow us to check whether changes in home-country economic conditions over our sample period correlate with changes in capital gains and relative purchase prices. We do so by interacting the country-level dummies for out-of-country buyers and sellers presented before with a continuous time (trend) variable. The coefficients on these interaction terms then indicate whether the relative prices paid by non-resident buyers, or capital gains realized by non-resident sellers, from any given country have gone up or down over time. In Table 11, we then show how these trends correlate (across countries) with the average annual real GDP growth, equity market return, and change in the share of income going to the top 1% of income earners over our sample period.[17]

[Insert Table 11 about here]

Table 11 shows that high real GDP growth and increases in top incomes are associated with significantly *lower* capital gains. Moreover, an increase in income inequality tends to go hand in hand with an increase in the "price premium" at purchase. Our results are consistent with wealth dynamics affecting the relative ability and willingness to forego financial returns. At the same time, it is hard to reconcile these empirical findings findings with a story based on information asymmetries.

[17]We want to focus on longer-term trends in real purchasing power, so we do not consider exchange rates in this analysis. Over our 25-year period, average annual real exchange rate changes (relative to France) do not show much variation across countries.

4.4 Discussion

The evidence presented in the two previous subsections suggests that heterogeneity in bargaining intensity is more likely to explain the lower capital gains of out-of-country buyers than information asymmetries. How to square our results with existing research on the importance of information asymmetries in (residential) real estate markets? First, we want to reiterate that our result is not one about timing or asset selection, but about transaction prices and capital gains *conditional on trading a given property at a given time*. Second, we do not argue that search costs do not matter in foreigners' decision-making. We presented some evidence that *resident* foreigners realize higher capital gains in areas with relatively high proportions of compatriots. Also, one unambiguous prediction is that the existence of search and information costs should imply higher average holding periods for both resident and non-resident foreigners, ceteris paribus. In additional regression analysis (unreported), in which we control for the timing of the initial investment, this is indeed what we find.

One important take-away from our results is that distance between (physical) assets and investors may not just proxy for information asymmetries but also correlate with investor characteristics that affect bargaining behavior. In the context of the housing market, the higher the distance between a property and its buyer, the wealthier—and the less representative of his home-location population—the investor may be on average. Of course, some of these dynamics can even be relevant *within* countries. If we repeat our baseline analysis of capital gains with more detailed investor residence variables (unreported), we find that both for French and foreign investors transaction prices upon resale are higher for investors living in the Paris region than for those living in the rest of France. At the same time, "out-of-town" buyers buy more valuable properties and are more likely to be in a high socio-professional category.

5 Out-of-Country Buyers and House Prices

5.1 Conditional correlations

Finally, we turn our attention to studying the impact of purchases by out-of-country households on real estate prices in the French capital. The effect of non-resident foreign demand on house prices is theoretically ambiguous. On the one hand, if housing supply is constrained (as is the case in Paris), an unexpected increase in non-resident foreign demand should lead to an increase in equilibrium prices and rents, ceteris paribus. On the other hand, however, if the non-resident foreign inflow in "treated" areas is perfectly offset by local out-migration by locals, or was anticipated and therefore capitalized in housing prices ex ante,[18] we will not see any effect.

As a first stab at this issue, we correlate geographical variation in non-resident foreign demand with variation in price increases over the full time frame. Figure 3 shows the twenty districts of Paris with the proportion of non-resident foreign purchases, just like before. The difference with Figure 1 is that the shading now represents cross-district variation in mean annualized capital gains instead of mean prices. To compute these statistics, we restrict ourselves to resales for which the purchase also fell within our sample period. We also only consider transactions between French households, which avoids concerns that our results are mechanically driven by overpaying on the part of non-resident foreigners.

[Insert Figure 3 about here]

Figure 3 shows a certain degree of geographical variation in capital gains over our period. However, there is no apparent correlation between average capital gains and the importance of non-resident foreign purchases across districts.

Next, we turn to measuring conditional correlations using micro-level data in a regression frame-

[18] In line with housing prices incorporating foreseeable future changes in demand, Cvijanović et al. (2010) document that *predictable* immigration patterns do not forecast housing price trends.

work. We create two new variables, $Inflow^{NRF}_{i,s\to t}$ and $Inflow^{RF}_{i,s\to t}$, which measure the cumulative net inflow of non-resident foreigners and resident foreigners, respectively, in property i's neighborhood over the years s until $t-1$. We can compute these measures as long as $s \geq 1992$, so that both the purchase year and the sale year fall in our sample period. The average (median) $Inflow^{NRF}_{i,s\to t}$ and $Inflow^{RF}_{i,s\to t}$ over properties' holding periods are 1.8 (1) and 4.2 (3). These numbers can be put in perspective by noting that a neighborhood typically has about 2,000 inhabitants—or about 1,000 households.

We then estimate the conditional correlations between inflow of foreigners on the one hand and price trends on the other hand through the following equation:

$$\ln R_{i,s,t} = \alpha + \delta_1 Inflow^{NRF}_{i,s\to t} + \delta_2 Inflow^{RF}_{i,s\to t} + X'_{i,s,t}\gamma + \varepsilon_{i,s,t}, \tag{4}$$

where $\ln R_{i,s,t}$ is the log total capital gain. If the coefficient δ_1 is positive, then higher capital gains are realized on properties in neighborhoods that have seen more purchases by out-of-country households over the holding period. The results of the OLS estimation of equation (4) are shown in Table 12. We use the same controls as before; column 2 controls for buyer and seller socio-demographic characteristics (age, gender, marital status, and socio-professional category). Again, we only consider transactions between French households.

[Insert Table 12 about here]

The results in Table 12 show a statistically significant positive conditional correlation between the net purchase volume of out-of-country households and price changes. However, the effect is economically small. The estimated coefficient of 0.002 suggests that an increase by one in the net purchase volume by non-resident foreigners in a neighbourhood is associated with a 0.2% increase in the price of a property.

5.2 Instrumental variable approach

Out-of-country purchase volume may of course be endogenous to contemporaneous house price changes, which could bias our coefficient of interest both upward and downward. A first concern is reverse causality: non-resident foreigners may be looking for the "hottest" neighborhoods and will purchase when and where prices are growing faster than average. Or they buy in areas where the interest by locals is already at its peak, and where prices have thus plateaued. A second concern is that of omitted variables. Properties in neighborhoods with different inflows of non-residents might have different rates of appreciation for reasons unrelated to that inflow. For example, it may be that public investments in the quality of daily life in a neighborhood lead to both an increase in property prices and to an increase in the attractiveness of the neighborhood to foreigners. This would lead OLS specifications to overestimate the association between the inflow of non-resident foreigners and house price growth. Other omitted variables could have the opposite effect.

To address these issues, we would ideally like to randomly assign non-resident demand shocks to neighborhoods and analyze the subsequent evolution in house prices. The econometric equivalent is to find an exogenous source of cross-sectional variation in the net inflow of non-resident foreigners, so that we can implement an instrumental variable approach.

Inspired by previous work on the effects of immigration on housing markets (e.g., Saiz, 2007; Gonzalez and Ortega, 2013), our main instruments predict actual (net) inflows of non-resident and resident foreigners into the different districts of Paris by allocating the *aggregate* (gross) inflows over a period to the districts based on historical settlement patterns. Each area is thus assigned a "share" of total purchases based on pre-existing networks. More specifically, we construct our instruments $Share^{NRF}_{i,s\to t}$ and $Share^{RF}_{i,s\to t}$ as follows. First, we consider for each nationality how households of this nationality were distributed over the twenty districts in Paris in 1982 using census data from INSEE. Second, for each year over our sample period 1992-2016 and for each nationality, we allocate the

total non-resident or resident number of purchases to the different districts based on the geographical spread from the first step. Third, we sum the predicted purchases over all nationalities. Finally, we divide by the year-1982 population in the district. The result is that these instrumental variables will take a high value for all neighborhoods in a given district in a given year if in that year there is a high number of purchases in Paris of non-resident or resident foreigners from countries that were highly represented in that district in 1982. Our identifying assumption is thus that this interaction between the geographical distribution of the foreign population in 1982 and aggregate nationality-level purchase volumes over the period 1992–2016 is only correlated with house price changes because it predicts variation in the district-level inflows of non-resident foreigners. (Our models will control for holding periods and neighborhood fixed effects as before.)

To isolate exogenous variation in non-resident demand in particular, we create an additional instrument as follows. We interact $Share^{NRF}_{i,s\to t}$ with the proportion of secondary residences in the neighborhood (in 1990) to create a neighborhood-level instrumental variable. As indicated in our earlier analysis, our data suggest a strong positive correlation between the ex ante desirability of a neighbourhood as the location for a secondary residence and the proportion of non-resident foreign buyers over 1992–2016. Importantly for our IV analysis, this correlation does not seem to be present for resident foreign buyers.

We thus run 2SLS regressions, where the second stage is equation (4), and in the first stage we estimate the following equations for our two endogenous variables:

$$Inflow^{NRF}_{i,s\to t} = \alpha + \eta_1 Share^{NRF}_{i,s\to t} + \eta_2 Share^{NRF}_{i,s\to t} \times Secondary_i + \eta_3 Share^{RF}_{i,s\to t} + X'_{i,s,t}\gamma + \varepsilon_{i,s,t} \quad (5)$$

$$Inflow^{RF}_{i,s\to t} = \alpha + \eta_1 Share^{NRF}_{i,s\to t} + \eta_2 Share^{NRF}_{i,s\to t} \times Secondary_i + \eta_3 Share^{RF}_{i,s\to t} + X'_{i,s,t}\gamma + \varepsilon_{i,s,t}. \quad (6)$$

Table 13 shows the results of our 2SLS analysis, again applied to transactions that involve only

French buyers and French sellers. The results of the first stage are shown in columns 1–2. At the bottom, we report Sanderson-Windmeijer multivariate F-statistics, which account for the fact that we have more than one endogenous variable in our model. The results of the second stage are shown in column 3.

[Insert Table 13 about here]

The first-stage results in columns 1–2 are in line with expectations (and with our earlier results). The inflow of non-resident foreigners in a district is high when the aggregate purchase volume by out-of-country buyers of nationalities that have historically lived in that district is high. We find an analogous effect for resident foreigners. Moreover, for non-resident foreigners, this "shift-share" effect is particularly strong in more desirable neighborhoods. In column 1, in which we instrument out-of-country inflow, the value of the F-statistic suggests strong instruments.

The second-stage results reported in column 3 show a coefficient on the non-resident foreign demand variable of interest that is similar to the one obtained in the reduced-form OLS setting, as shown in Table 12. However, it is less precisely estimated, meaning that we can now no longer reject the hypothesis that the effect on house prices is on average equal to zero.

5.3 Discussion

The results of our IV estimation show only weak evidence that non-resident foreign demand shocks within Paris over our time frame have led to variation in price appreciation rates across neighborhoods. While we find an effect that is positive—in line with existing literature (Badarinza and Ramadorai, 2018; Favilukis and Van Nieuwerburgh, 2018)—it is economically small and no longer statistically significant. One contributing factor could be that Paris is a relatively small city—at least compared to places like London or New York—in which different neighborhoods (and even districts) are well-integrated with each other. Demand shocks to one area may therefore relatively quickly "spill over"

to other areas as locals flow out of "treated" neighborhoods into other ones. Indeed, assuming that housing supply is inelastic, increased demand by out-of-country buyers for certain neighborhoods will not necessarily imply higher price increases in those areas as long as there are "mobile native price arbitrageurs" that relocate out of these neighborhoods (Saiz and Wachter, 2011). Of course, one implication of this is that our empirical results may underestimate the causal effect of non-resident foreign demand on *average* house prices in Paris.

6 Conclusion

This paper studies the investment behavior, investment performance, and price impact of non-resident foreigners in the Paris housing market, employing unique micro-level transaction data. We obtain detailed information on all real estate transactions in Paris between 1992 and 2016 involving foreign buyers and sellers—and on a random sample of transactions with French buyers and sellers—from a database of notarial deeds. We find that non-resident foreign demand for real estate in Paris has to a large degree been driven by older foreigners with high socio-economic status looking to buy a relatively small but high-quality property in a desirable neighborhood. These "out-of-country" buyers buy at higher prices and resell at substantially lower prices than local investors, ceteris paribus. The results of multiple tests suggest that the driving force behind this empirical pattern is not information asymmetries, but rather the existence of wealth-related differences in bargaining intensity. As such, our results point to a role for worldwide variation in the willingness to "pay" (i.e., to forego financial returns) in the pricing of property in superstar locations.

Finally, we find a statistically significant but economically small correlation between non-resident foreign demand and housing price changes. When instrumenting non-resident foreign demand using "shift-share" instruments based on the previous settlement patterns of foreign nationals and an additional instrument exploiting the ex ante desirability of neighborhoods, the coefficient is of the same

order of magnitude but loses its statistical significance. Non-resident foreign demand shocks thus do not appear to have substantially pushed up the relative price levels in the affected neighborhoods.

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Figure 1: **Locational sorting**

This map shows the 20 districts of Paris. The proportion of non-resident foreign buyers for each district is shown in brackets under the district number. More darkly shaded districts have higher mean transaction prices.

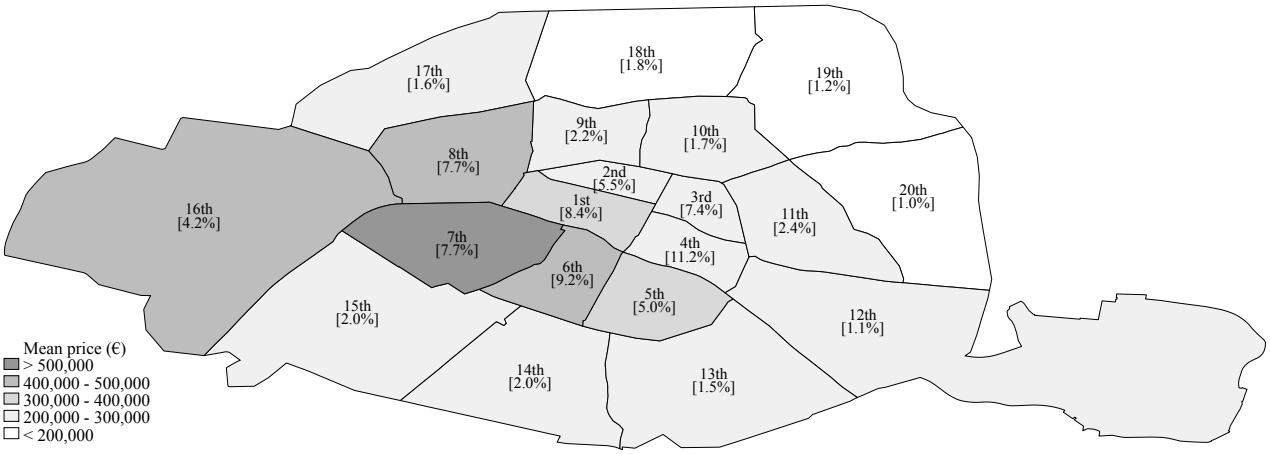

Figure 2: **Historical trends**

This figure shows the yearly proportions (in percentages) of purchases by non-resident foreigners and by resident foreigners (against the left axis). For the three largest foreign buyer nationalities, it also shows the yearly number of non-resident purchases (against the right axis).

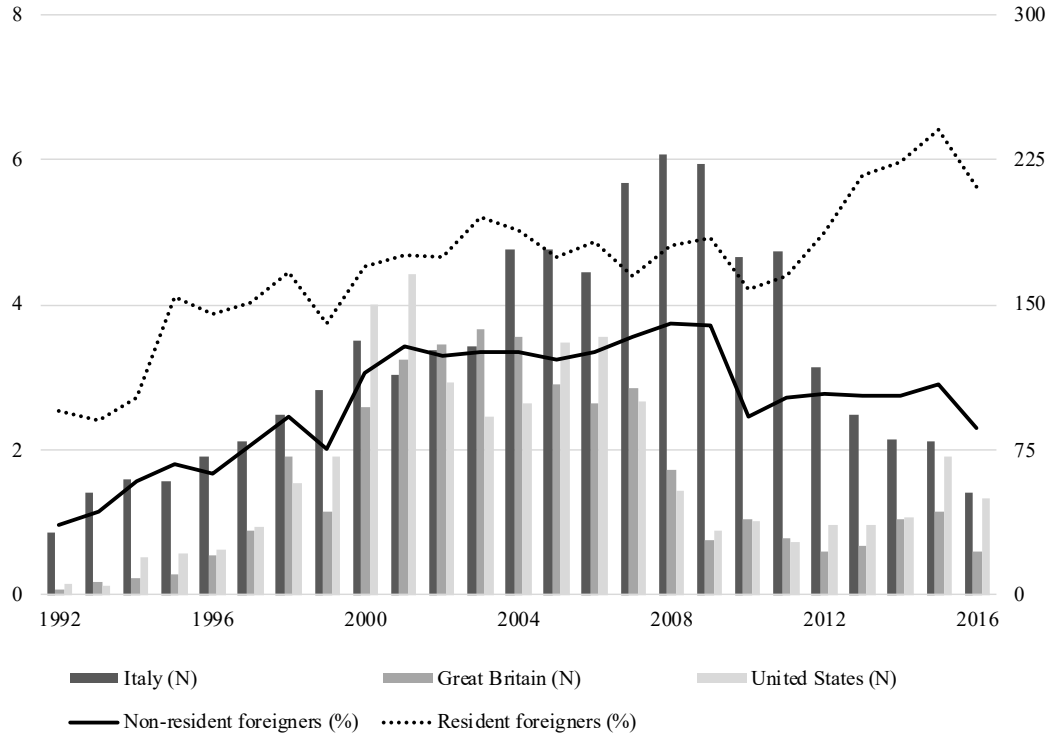

Figure 3: **Variation in average capital gains**

This map shows the 20 districts of Paris. The proportion of non-resident foreign buyers for each district is shown in brackets under the district number. More darkly shaded districts have higher mean annualized capital gains.

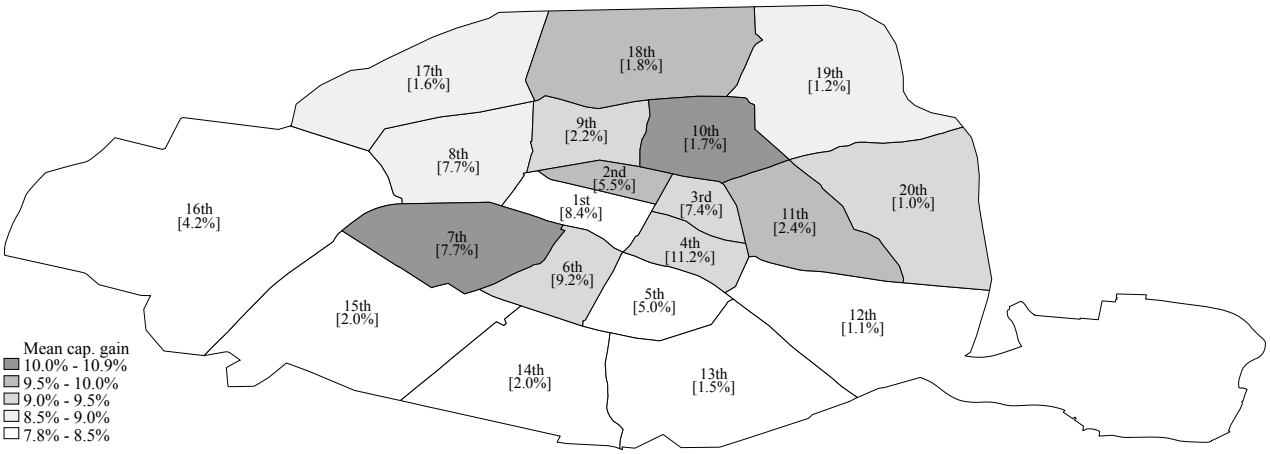

Table 1: **Composition of data set**

Panel A of this table reports the number of observations and average transaction price for subsamples of our data based on the nationality status of buyers and sellers. Panel B reports the distribution of residence locations for foreign and French buyers and sellers. Panel C shows the relative frequency of non-resident foreigners, resident foreigners, and Frenchmen among buyers and sellers, and also reports average purchase prices for these three groups. Panel D reports the number of observations, average purchase price, and the relative importance of non-residents for subsamples of our database based on the twenty most frequent foreign buyer nationalities.

Panel A: Composition of data set

	N	Mean price (€)
Foreign buyer & French seller	31,751	288,995
French buyer & foreign seller	18,640	308,687
Foreign buyer & foreign seller	3,836	307,472
French buyer & French seller (10% sample)	42,908	268,702

Panel B: Residence location of buyers and sellers

	Foreign buyers (%)	French buyers (%)	Foreign sellers (%)	French sellers (%)
Paris	51.1	67.1	43.6	60.6
Paris region (excluding Paris)	8.4	18.1	7.4	16.6
Rest of France	2.9	11.5	3.8	19.2
Abroad ("non-resident")	37.6	3.3	45.2	3.6

Panel C: Buyer and seller groups

	% of buyers	Mean price (€)	% of sellers
Non-resident foreigners	2.8	358,131	2.1
Resident foreigners	4.6	250,550	2.5
French	92.6	270,367	95.3

Panel D: Top-twenty of foreign buyer nationalities

	N	Mean price (€)	% non-resident
Italy	5,823	303,030	51.9
Great Britain	3,026	319,549	47.7
United States	2,687	414,990	59.8
Portugal	2,217	154,942	3.5
China	2,071	221,937	6.1
Algeria	1,930	191,835	22.6
Germany	1,719	284,757	36.4
Spain	1,474	237,033	22.5
Morocco	1,343	221,757	31.9
Belgium	1,064	343,520	41.1
Tunisia	1,016	188,875	19.1
Switzerland	767	327,163	69.5
Lebanon	633	477,867	56.6
Japan	614	254,213	24.8
Ireland	569	266,194	58.7
Canada	473	413,081	49.3
Iran	471	284,220	33.8
Russia	440	448,315	44.8
Israel	422	175,076	78.4
Netherlands	403	331,233	42.2

Table 2: **Investor characteristics**

This table show a number of statistics for the non-resident foreigners, resident foreigners, and French households in the buyer population.

	Mean age	% female	% married	% high soc.-prof.
Non-resident foreigners	49.9	29.5	63.1	50.8
Resident foreigners	42.7	27.9	52.0	36.4
French	43.0	33.1	43.7	45.1

Table 3: **Property characteristics**

Columns 1–4 of this table report the results of the OLS estimation of equation (1). In columns 1 and 2, we use the natural log of the previous transaction price of the property (i.e., the initial purchase price and not the current (re)sale price) as the dependent variable. Columns 3 and 4 repeat the estimation using the natural log of the previous price divided by the surface area in square meters. Columns 5–6 show regressions with the surface area and the number of rooms as the dependent variables. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	Prev. price	Prev. price	Prev. price/m^2	Prev. price/m^2	m^2	# rooms
Buyer: non-resident foreigner	0.104 ***	-0.064 ***	0.147 ***	0.025 ***	-3.676 ***	-0.164 ***
	(0.011)	(0.010)	(0.007)	(0.007)	(0.358)	(0.012)
Buyer: resident foreigner	-0.126 ***	-0.107 ***	-0.056 ***	-0.034 ***	-3.134 ***	-0.077 ***
	(0.009)	(0.008)	(0.006)	(0.005)	(0.282)	(0.010)
Prev. year fixed effects	Yes	Yes	Yes	Yes	No	No
Year fixed effects	No	No	No	No	Yes	Yes
Neighborhood fixed effects	No	Yes	No	Yes	Yes	Yes
N	44,902	44,796	37,750	37,661	79,347	95,206
R^2	0.517	0.615	0.720	0.775	0.184	0.110

Table 4: **Locational sorting**

This table reports the relative importance of non-resident foreign buyers and resident foreign buyers within neighborhoods deciles ranked by a number of different proxies for ex ante desirability. The proxies used are the average price per square meter over the first five years of our sample period (1992–1996), the year-1990 percentage of adults with a higher education degree according to census data of the French statistical office INSEE, and the year-1990 ratio of secondary residences (owned by both Frenchmen and foreigners) according to the same source.

	Average price/m^2		Education level		Ratio of secondary resid.	
	% non-res. for.	% res. for.	% non-res. for.	% res. for.	% non-res. for.	% res. for.
Decile 1	1.6	6.0	1.3	8.2	1.3	6.7
Decile 2	1.8	5.2	1.3	6.1	1.3	6.7
Decile 3	1.9	5.2	1.8	4.9	1.4	4.8
Decile 4	2.1	5.0	2.0	4.5	1.5	4.4
Decile 5	2.4	4.3	2.0	4.4	2.0	4.5
Decile 6	2.3	4.2	2.7	4.3	2.1	4.4
Decile 7	2.9	4.3	3.5	4.1	2.4	4.2
Decile 8	3.3	4.3	4.1	4.3	2.7	4.2
Decile 9	5.8	4.2	3.9	3.9	4.5	4.2
Decile 10	8.0	4.7	4.9	3.8	8.4	4.5

Table 5: **Drivers of purchase decisions**

Columns 1–2 of this table report the results of the OLS estimation of equation (2) using the log yearly change in the number of purchases by non-resident foreigners of a certain nationality as the dependent variable. Columns 4–5 repeat the analysis for changes in resident foreigner purchase volume. The analysis is restricted to the top-twenty buyer nationality groups in our sample, and to cases where the lagged number of purchases was greater than five. Columns 3 and 6 add year fixed effects. Data on country-level GDP growth come from the World Bank, whereas equity market return and exchange rate (relative to euro) data come from Bloomberg. Data on changes in income inequality (proxied by the share of income that goes to the top 1% of earners) are from the World Inequality Database. All macroeconomic variables are expressed in real terms. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Sample:	Non-res. for.	Non-res. for.	Non-res. for.	Res. for.	Res. for.	Res. for.
GDP growth	2.671 ***	2.426 **	1.938 *	0.982	0.912	0.755
	(0.898)	(0.994)	(1.035)	(0.631)	(0.715)	(0.714)
Equity return	0.149	0.129	-0.041	0.104	0.129	-0.008
	(0.101)	(0.107)	(0.148)	(0.076)	(0.082)	(0.103)
FX change	0.816 ***	0.956 ***	1.027 ***	0.326	0.327	0.306
	(0.279)	(0.290)	(0.292)	(0.218)	(0.232)	(0.232)
Income inequality change		0.942 **	0.325		-0.479	-0.644
		(0.443)	(0.485)		(0.390)	(0.396)
Year fixed effects	No	No	Yes	No	No	Yes
N	313	239	239	364	300	300
R^2	0.086	0.133	0.292	0.025	0.031	0.193

Table 6: **Capital gains and relative purchase prices**

Panel A of this table reports average realized holding periods and log total capital gains on resales for non-resident foreigners, resident foreigners, and French households in the seller population. Panel B reports the results of the OLS estimation of equation (3) using the log total capital gain on a property's resale (winsorized at the bottom and top percentile) as the dependent variable. The specification in column 2 controls for seller and buyer age, gender, marital status, and socio-professional category. The analysis is restricted to property resales with holding periods of at most 40 years. Robust standard errors are clustered by sale year. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: Descriptive statistics

	Mean hold. period	Mean log cap. gain (%)
Non-resident foreigners	10.4	57.9
Resident foreigners	10.4	75.4
French	10.7	67.6

Panel B: Regressions explaining capital gain on a property's resale

	(1)	(2)
Seller: non-resident foreigner	-0.134 ***	-0.129 ***
	(0.009)	(0.009)
Seller: resident foreigner	0.041 ***	0.033 ***
	(0.007)	(0.007)
Seller: French	[left out]	[left out]
Buyer: non-resident foreigner	0.022 ***	0.026 ***
	(0.006)	(0.007)
Buyer: resident foreigner	-0.007	-0.005
	(0.004)	(0.004)
Buyer: French	[left out]	[left out]
Seller and buyer socio-demogr. char.	No	Yes
Holding period × education interact.	Yes	Yes
Neighborhood fixed effects	Yes	Yes
N	53,370	51,571
R^2	0.695	0.692

Table 7: **Time-series variation in capital gains and relative purchase prices**

This table repeats the regressions reported in Panel B of Table 6, but with separate dummy variables for out-of-country sellers and buyers for the periods 1992–2000, 2001–2008, and 2009–2016. Robust standard errors are clustered by sale year. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)
Seller: non-resident foreigner [1992–2000]	-0.156 ***	-0.156 ***
	(0.020)	(0.023)
Seller: non-resident foreigner [2001–2008]	-0.140 ***	-0.133 ***
	(0.006)	(0.007)
Seller: non-resident foreigner [2009–2016]	-0.125 ***	-0.120 ***
	(0.015)	(0.015)
Seller: resident foreigner	0.041 ***	0.033 ***
	(0.007)	(0.007)
Seller: French	[left out]	[left out]
Buyer: non-resident foreigner [1992–2000]	0.022 *	0.027 **
	(0.011)	(0.012)
Buyer: non-resident foreigner [2001–2008]	0.022 *	0.025 *
	(0.011)	(0.012)
Buyer: non-resident foreigner [2009–2016]	0.024 ***	0.026 ***
	(0.007)	(0.007)
Buyer: resident foreigner	-0.007	-0.005
	(0.004)	(0.004)
Buyer: French	[left out]	[left out]
Seller and buyer socio-demogr. char.	No	Yes
Holding period × education interact.	Yes	Yes
Neighborhood fixed effects	Yes	Yes
N	53,370	51,571
R^2	0.695	0.699

Table 8: **Cross-sectional variation in relative purchase prices**

This table reports the estimated "price premium"—relative to a purchase by a French household—associated with out-of-country purchases from each of the twenty most frequent buyer nationalities in our sample. The estimates come from repeating the regression reported in column 2 of Panel B of Table 6, but with separate dummy variables for out-of-country buyers (and sellers) of different nationalities. The table also shows proxies for information asymmetries, namely whether the country is a neighbor of France, whether French is either an official or widely-spoken language, and the country's internet penetration in the year 2000 as reported by the International Telecommunication Union.

	"Price premium" at purchase	Neighboring country?	Common language?	% internet users in 2000
Russia	0.103	No	No	N.A.
Ireland	0.078	No	No	17.9
United States	0.077	No	No	43.1
Switzerland	0.047	Yes	Yes	47.1
Canada	0.042	No	Yes	51.3
Germany	0.040	Yes	No	30.2
Spain	0.028	Yes	No	13.6
Italy	0.026	Yes	No	23.1
Great Britain	0.025	No	No	26.8
Netherlands	0.014	No	No	44.0
Belgium	0.011	Yes	Yes	29.4
Morocco	0.002	No	Yes	0.7
Japan	0.001	No	No	30.0
Lebanon	-0.012	No	Yes	8.0
Algeria	-0.038	No	Yes	0.5
China	-0.047	No	No	1.8
Israel	-0.055	No	No	20.9
Portugal	-0.092	No	No	16.4
Tunisia	-0.098	No	Yes	2.8

Table 9: **Role of historical presence of compatriots**

This table repeats the regressions reported in Panel B of Table 6, but now interacting the non-resident and resident foreign seller and buyer dummies with dummies capturing district-level terciles (for each nationality) by percentage of compatriots that were living in 1982 in each district. The analysis is restricted to the top-twenty buyer nationality groups in our sample, and to resales with initial purchases since 1982. Robust standard errors are clustered by sale year. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)
Seller: non-resident foreigner	-0.118 ***	-0.114 ***
	(0.013)	(0.014)
Seller: non-res. for. × mid compatriots tercile	-0.002	-0.002
	(0.011)	(0.012)
Seller: non-res. for. × top compatriots tercile	-0.017	-0.021 *
	(0.013)	(0.012)
Seller: resident foreigner	0.021 **	0.016 *
	(0.009)	(0.009)
Seller: res. for. × mid compatriots tercile	0.019	0.017
	(0.013)	(0.013)
Seller: res. for. × top compatriots tercile	0.029 **	0.027 **
	(0.012)	(0.011)
Seller: French	[left out]	[left out]
Buyer: non-resident foreigner	0.019 **	0.021 ***
	(0.007)	(0.007)
Buyer: non-res. for. × mid compatriots tercile	-0.007	-0.006
	(0.009)	(0.009)
Buyer: non-res. for. × top compatriots tercile	0.008	0.002
	(0.013)	(0.014)
Buyer: resident foreigner	0.004	0.004
	(0.006)	(0.006)
Buyer: res. for. × mid compatriots tercile	-0.014	-0.011
	(0.008)	(0.008)
Buyer: res. for. × top compatriots tercile	-0.023 ***	-0.020 **
	(0.008)	(0.009)
Buyer: French	[left out]	[left out]
Seller and buyer socio-demogr. char.	No	Yes
Holding period × education interact.	Yes	Yes
Neighborhood fixed effects	Yes	Yes
N	42,263	40,896
R^2	0.592	0.597

Table 10: **Role of seller wealth**

This table repeats the regressions reported in Panel B of Table 6, but now interacting the non-resident and resident foreign seller dummies with dummies capturing terciles of predicted wealth based on the property acquisitions of investors with similar socio-demographic characteristics (nationality, gender, and marital status). See text in subsection 4.3 for more details. The analysis is restricted to the top-twenty buyer nationality groups in our sample. Robust standard errors are clustered by sale year. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)
Seller: non-resident foreigner	-0.106 ***	-0.103 ***
	(0.014)	(0.014)
Seller: non-res. for. × mid wealth tercile	-0.022 *	-0.020 *
	(0.012)	(0.012)
Seller: non-res. for. × top wealth tercile	-0.046 ***	-0.048 ***
	(0.015)	(0.014)
Seller: resident foreigner	0.121 ***	0.105 ***
	(0.014)	(0.013)
Seller: res. for. × mid wealth tercile	-0.093 ***	-0.081 ***
	(0.014)	(0.014)
Seller: res. for. × top wealth tercile	-0.144 ***	-0.127 ***
	(0.017)	(0.016)
Seller: French	[left out]	[left out]
Buyer: non-resident foreigner	0.021 ***	0.025 ***
	(0.006)	(0.007)
Buyer: resident foreigner	-0.007	-0.004
	(0.004)	(0.004)
Buyer: French	[left out]	[left out]
Seller and buyer socio-demogr. char.	No	Yes
Holding period × education interact.	Yes	Yes
Neighborhood fixed effects	Yes	Yes
N	50,706	49,008
R^2	0.697	0.700

Table 11: **Role of home-country economic growth**

This table reports correlations between country-specific trends in capital gains and relative purchase prices, and average annual home-country economic growth rates, equity market returns, and income inequality changes over our sample period. The estimated trends in capital gains and relative purchase prices come from repeating the regression reported in column 2 of Panel B of Table 6, but with separate dummy variables for out-of-country sellers and buyers of different nationalities plus interaction effects with time. Data on country-level GDP growth come from the World Bank, whereas equity market return data come from Bloomberg. Data on changes in income inequality (proxied by the share of income that goes to the top 1% of earners) are from the World Inequality Database. All macroeconomic variables are expressed in real terms. The analysis is restricted to the top-twenty buyer nationality groups in our sample. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

	Trend capital gains	Trend relative purchase prices
Trend relative purchase prices	-0.34	
GDP growth	-0.51 **	0.28
Equity return	-0.35	0.00
Income inequality change	-0.79 ***	0.51 **

Table 12: **Conditional correlations between inflow of foreigners and prices (OLS)**

This table reports the results of the OLS estimation of equation (4) using the log total capital gain on a property's resale (winsorized at the bottom and top percentile) as the dependent variable. Our main independent variables measure the net inflow of non-resident foreigners and resident foreigners, respectively, in property i's neighborhood between years s and t. (This measurement is lagged by one year, meaning that we count the cumulative net inflow over the years s until $t-1$.) The specification in column 2 controls for seller and buyer age, gender, marital status, and socio-professional category. The analysis is restricted to property transactions between French households. Robust standard errors are clustered by sale year. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)
Inflow non-resident foreigners	0.002 **	0.002 *
	(0.001)	(0.001)
Inflow resident foreigners	0.000	0.000
	(0.001)	(0.001)
Seller and buyer socio-demogr. char.	No	Yes
Holding period × education interact.	Yes	Yes
Neighborhood fixed effects	Yes	Yes
N	14,185	13,780
R^2	0.582	0.588

Table 13: **Impact of inflow of foreigners on prices (2SLS)**

This table reports 2SLS regression results. The results of the second stage, which repeats the estimation of the model in column 2 in Table 12, are shown in column 3. The first-stage results reported in columns 1 and 2 instrument the inflow of non-resident foreigners and resident foreigners, respectively. Our main instruments predict actual inflows of non-resident and resident foreigners into the different districts of Paris by allocating the aggregate inflows over a period to the districts based on historical settlement patterns. Each area is thus assigned a "share" of total purchases of both non-resident and resident foreigners based on pre-existing networks. We also create an additional instrument by interacting the shift-share instrument for non-resident foreigners with the ex ante proportion of secondary residences in the neighborhood to create a neighborhood-level instrumental variable. See text in subsection 5.2 for more details. Robust standard errors are clustered by sale year. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)
	Stage 1		Stage 2
Dependent variable:	Inflow non-res. for.	Inflow res. for.	
Inflow non-resident foreigners			0.003
			(0.003)
Inflow resident foreigners			0.010
			(0.021)
Shift-share non-res. for. purchases	0.342 ***	-0.108 ***	
	(0.040)	(0.035)	
Shift-share non-res. for. purchases	1.199 ***	0.190 **	
x Year-1990 ratio of secondary resid.	(0.107)	(0.093)	
Shift-share res. for. purchases	-0.071 ***	0.028 **	
	(0.015)	(0.013)	
Seller and buyer socio-demogr. char.	Yes	Yes	Yes
Holding period × education interact.	Yes	Yes	Yes
Neighborhood fixed effects	Yes	Yes	Yes
N	13,778	13,778	13,778
Sanderson-Windmeijer F-statistic	55.12	4.84	